Cancer Risk Reduction Among Native American Adolescents

Grant Number: R44CA54719-03

Abbreviated Abstract

Building on Phase I results, this Phase II study will do the following:

- Develop software for delivering intervention to reduce cancer risks associated with tobacco use and dietary habits among Native American adolescents;
- Compare the effects of the software with those of conventional group intervention in a randomized clinical trial with a representative sample of Native American adolescents; and
- Analyze the costs of both modes of intervention delivery.

Data from Phase I established the feasibility of using interactive computer software to deliver interventions for reducing cancer risks among Native American youths. Phase II will expand the software into a curriculum of five 40-minute interactive lessons. Once developed, the software will undergo field testing in a randomized trial with Native American youths from urban sites in the Northeastern United States. The ability of the software to effectively and efficiently deliver cancer prevention content will be investigated by comparing the software curriculum with a conventional group intervention curriculum. Of interest to the comparison will be outcome variables on Native American youth subjects measured before, after, and semiannually following intervention delivery, as well as process variables on subjects' perceptions of the intervention and the costs of the intervention in terms of time and resources consumed. If found to be effective and efficient, software produced in Phase II will be disseminated nationally to relevant Native American organizations to reach the greatest number of youths at the lowest possible cost.

Primary Investigator

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Research Team & Affiliations

Steven Schinke and Beverly Singer, Columbia University

Total Budget

$850,000

Research Objectives

AIMS

1) Develop software for delivering interventions to reduce cancer risks associated with tobacco use and dietary habits among Native American adolescents.
2) Compare the effects of the software with those of conventional group intervention in a randomized clinical trial with a representative sample of Native American adolescents.
3) Analyze the costs of both modes of intervention delivery.
4) Disseminate the tested program.

Theory/Hypothesis
Social cognitive theory

Experimental Design
Randomized clinical trial

Final Sample Size & Study Demographics
Native American youths; 415 adolescents

Data Collection Methods
Self-report and biochemical sampling

Outcome Measures
Tobacco use and dietary intake of fat and fiber

Evaluation Methods
Compare intervention-arm youths with control-arm youths

Research Results
- Outcome data revealed that youths in both conditions reported higher self-efficacy and personal control scores at final followup than at pretest.

- For youths in the computer condition, reported tobacco use was lower than for youths in the conventional condition. Between pretest and followup, and compared to youths in the conventional condition, computer youths reported less smoking over the last month ($p < 0.001$) and 12 months ($p < 0.001$) and were more likely to report themselves as “nonsmokers” ($p < 0.001$). Other tobacco use items showed nonsignificant improvement for subjects in both the computer and conventional conditions.

- For dietary variables, youths in both conditions reported increased knowledge about the health effects of various foods and food types between pretest and subsequent measurements. Youths reported increased positive perceptions of their ability to change their diets toward greater consumption of fiber, fruits, and vegetables and toward reduced consumption of fats between the two measurements [$t(121) = 2.54$ ($p < 0.01$)]. Independent t tests ($n = 144$ at pretest and $n = 122$ at posttest) showed that there was a decline in fat intake from 44.1 percent to 34.6 percent ($p < 0.001$), an increase in percentage of calories from complex carbohydrates from 34.4 percent to 45.5 percent ($p < 0.01$), and an increase in fiber from fruits and vegetables from 9.22 grams to 15.67 grams a day ($p < 0.05$). Fiber from beans increased from 2.74 grams to 3.72 grams but did not reach significance.

- In sum, outcome findings suggest that computer intervention may be more economical and persuasive in reducing cancer risks than the same content delivered in a more traditional group format. Computer intervention achieved the same or better improvements in youth scores for reduced cancer risks compared to conventional intervention. Those improvements, together with the decreased costs associated with its delivery, make a strong case for software as an effective and attractive preventive intervention vehicle. Phase II research found that youths in both intervention conditions improved their scores on measures of cancer risks after receiving intervention (confirming our first hypothesis), but that youths preferred the computer as a means for delivering intervention (disconfirming our second hypothesis) and, finally, that computer intervention required less staff time than conventional intervention (confirming our third hypothesis).

Barriers & Solutions

No significant barriers were encountered.

Product(s) Developed from This Research

Smoke Signals; Boy and Woman Bear